

CLAIMS

1. Exercise apparatus for exercising lower limbs, in particular for exercising lower limbs to perform a cyclic muscular exercise, or consisting of an alternating succession of concentric and eccentric steps,
5 characterised in that it comprises a carrying structure (12), to which at least one seat for the user (13) and a support and guide member (14) of two footboards (15), or support bases for feet, are constrained, as well as an actuator (16) connected to said support and guide
10 member (14) of the footboards (15), wherein said support and guide member (14) is constrained to the carrying structure (12) by a pin or fulcrum (17) and is adapted for performing a hunting motion on a plane at least on one
15 side relative to a longitudinal axis of the apparatus, said footboards (15) describing a curvilinear trajectory around the fulcrum (17).
2. Apparatus according to claim 1, characterised in that said plane is horizontal.
- 20 3. Apparatus according to claim 1, characterised in that said support and guide member (14) of the footboards (15) comprises at least one bar, which forms a lever arm, connected at opposed ends to the carrying structure (12) in said fulcrum (17) as well as to said footboards (15),
25 respectively.
4. Apparatus according to claim 1, characterised in that

said footboards (15) are turnably fixed to a plate (18) by an articulated joint (19) which allows their rotation around their axis.

5. Apparatus according to claim 4, characterised in that
5 said plate (18) is connected to the support and guide member (14) of the footboards (15) by a shaft or connecting element (23).

6. Apparatus according to claim 4, characterised in that said articulated joint (19) imposes an
10 adjustment and a restriction to the rotation of the footboards (15).

7. Apparatus according to claim 1, characterised in that it comprises means for adjusting the reciprocal distance (20) between said footboards (15).

15 8. Apparatus according to claim 5, characterised in that said support plate (18) is free to rotate around the axis of shaft (23).

9. Apparatus according to claim 1, characterised in that said actuator (16) is connected in an articulated
20 manner at opposed ends to said carrying structure (12) and to said support and guide member (14) of the footboards (15), respectively.

10. Apparatus according to claim 1, characterised in that said actuator (16) is a pneumatic piston moving
25 inside a cylinder.

11. Apparatus according to claim 1, characterised in

that said actuator (16) is connected to the support and guide member (14) of the footboards (15) by a connecting element (21), the position of said element (21) being adjustable relative to the member (14).

5 12. Apparatus according to claim 1, characterised in that said actuator (16) exerts a variable and adjustable power.

13. Apparatus according to claim 1, characterised in that said actuator (16) has an adjustable stroke.

10 14. Apparatus according to claim 4, characterised in that it comprises a means for adjusting (26) the position of the footboard carrying plate (18) on the support and guide member (14).

15 15. Apparatus according to claim 1, characterised in that said seat (13), rotating around the axis of a support pin (24), comprises means for adjusting (30) the distance between said pin (24) and the fulcrum (17) of the support and guide member (14) of the footboards (15).

20 16. Apparatus according to claim 1, characterised in that it comprises a safety device for the automatic or controlled deactivation of the actuator (16).

17. Apparatus according to claim 4, characterised in that it comprises adjustable locking means (44) for
25 locking said support plates (18) of the footboards during the exercise at a fixed angle relative to a

longitudinal axis of the apparatus.

18. Apparatus according to claim 17, characterised in that said locking means comprises an additional bar (44) hinged to said carrying structure (12) and to said 5 at least one support plate (18) of the footboards (15), said additional bar (44) being arranged parallel relative to said support and guide member (14) for keeping said at least one support plate (18) at a fixed angle relative to a longitudinal axis of the apparatus 10 during the exercise.

19. Apparatus according to claim 18, characterised in that said additional bar (44) has an adjustable height.

20. Apparatus according to claim 4, characterised in 15 that said footboards (15) are connected to one another by a bar (43).

21. Apparatus according to claim 4, characterised in that each of said footboards (15) comprises a frame (41) connected by said articulated joint (19) to a top plate 20 (18) and to a bottom plate (18) integral to one another, as well as a support surface (42) for the foot, hinged to said frame (41) according to a horizontal axis.

22. Apparatus according to claim 5, characterised in that it comprises a braking device (45) for restricting 25 the relative rotation motion around said shaft (23) between said support and guide member (14) of the

footboards (15) and said at least one support plate (18) of the footboards (15).

23. Apparatus according to claim 22, characterised in that said braking device (45) comprises a disc (46) 5 adapted for being pressed against said at least one plate (18) by an adjustable stem (47).

24. Apparatus according to claim 1, characterised in that it comprises an electronic control system for said actuator (16).

10 25. Apparatus according to claim 1, characterised in that each of said footboards (15) is provided with a loading cell (33), adapted for measuring the load exerted at any moment by the user on each footboard (15), said loading cells (33) being interfaced with a display 15 (34).

26. Apparatus according to claim 1, characterised in that it comprises means for measuring (48) the relative rotation between said support plates (18) of the footboards and said support and guide member (14) of 20 the same.